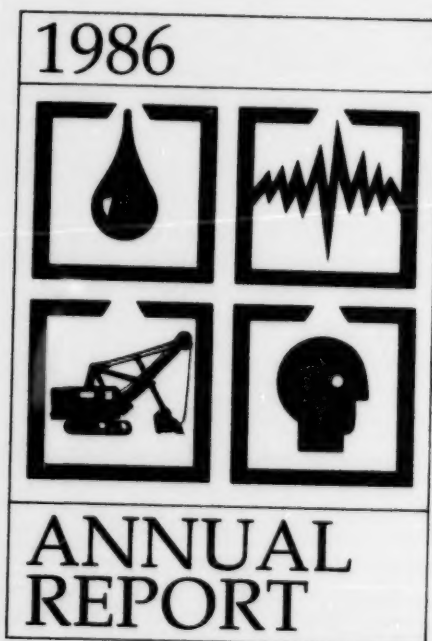




Ministry of Energy,
Mines & Petroleum
Resources



October, 1987

Hon. Jack Davis, Minister

80
645
2
1986
14

**BRITISH COLUMBIA
CATALOGUING IN
PUBLICATION DATA**

British Columbia. Ministry of
Energy, Mines and
Petroleum Resources.
Annual report. — 1978.

Continues: British
Columbia. Ministry of Mines
and Petroleum Resources.
Annual report. ISSN 0365-9356.

Continues in part: British
Columbia. Ministry of Energy,
Transport and Communi-
cations. Annual report. ISSN
0709-4477.

Reports for 1980, 1981,
and 1982 issued as 1 volume
published in 1984.

ISSN 0228-0078 = Annual
report — Minister of Energy,
Mines and Petroleum
Resources.

1. British Columbia.
Ministry of Energy, Mines and
Petroleum Resources —
Periodicals. 2. Mines and
mineral resources — British
Columbia — Periodicals.

TN27.B7B76
354.71106823'8'05

Rev. Jan. 1985

To the Honourable
JACK DAVIS
Minister of Energy, Mines and
Petroleum Resources
Parliament Buildings
Victoria, B.C.

Sir:
I have the honour to submit the Annual Report of
the Ministry of Energy, Mines and Petroleum
Resources for the year 1986.

Yours truly,

R.D. Flitton,
Deputy Minister



The Honourable Robert G. Rogers
Lieutenant-Governor of British Columbia

May It Please Your Honour:

I respectfully submit the Annual Report of the
Ministry of Energy, Mines and Petroleum Resources
for the year 1986.

Jack Davis,
Minister



MINISTRY OVERVIEW

The energy, mineral and petroleum industries of British Columbia contributed \$5 billion to the provincial economy in 1986. Solid mineral production was valued at \$2.5 billion, oil and natural gas production was worth another \$661 million, and the B.C. Hydro and Power Authority reported revenue of \$1.9 billion with \$45 million of it earned by electricity exports to the United States.

It is the responsibility of the Ministry of Energy, Mines and Petroleum Resources to ensure the orderly development of our valuable resources. At the same time, the Ministry also protects the environment, applies safety standards, collects revenue, formulates policies and advises government. The Minister is directly responsible for three Crown agencies operating in the energy sector: B.C. Hydro, the B.C. Petroleum Corporation and the B.C. Utilities Commission.

Under the Ministry's stewardship, our mining and petroleum industries are consistently the greatest source of direct resource income for the provincial government. In 1986, that revenue amounted to \$225 million.

Administering the province's mineral and energy resources and regulating a complex industry is a big responsibility carried out by a comparatively small Ministry – 306 full-time staff or the equivalent. The Ministry is headquartered in Victoria but maintains district operations at nine other locations around the province: Fernie, Fort St. John, Kamloops, Nanaimo, Nelson, Prince George, Quesnel, Smithers and Vancouver.

This report covers the highlights of Ministry operations and provides brief accounts of industry status and energy trends for the calendar year 1986. More detailed information and statistics are provided in a number of other Ministry publications available from:

*Ministry of Energy, Mines
and Petroleum Resources
Publications Distribution
Parliament Buildings
Victoria, B.C. V8V 1X4
Telephone (604) 387-3188*

B.C. HYDRO

BCPC

BCUC

MINISTER

DEPUTY MINISTER

EXECUTIVE
CO-ORDINATOR

DIRECTOR OF
COMMUNICATIONS

ENERGY
RESOURCES
DIVISION



MINERAL
RESOURCES
DIVISION



PETROLEUM
RESOURCES
DIVISION



FINANCE &
ADMINISTRATION
DIVISION





ENERGY RESOURCES DIVISION

THE ENERGY RESOURCES DIVISION

advises on policies and programs designed to develop British Columbia's energy resources in such a way that they:

- * encourage economic development
- * maintain environmental integrity
- * balance current demands against future needs
- * achieve energy security and, in the long run, energy self-sufficiency for the province.

**ASSISTANT
DEPUTY
MINISTER**

**POLICY
DEVELOPMENT
BRANCH**

Develops and recommends short- and long-term energy policy strategies.

**PROJECT ANALYSIS
BRANCH**

Co-ordinates reviews of proposals for the development, use and removal of B.C. energy resources, ensuring that such projects are in the public interest.

**FORECASTS AND
SPECIAL PROJECTS
BRANCH**

Prepares annual forecasts on energy supply and demand in the province and undertakes special studies on energy projects.

The Energy Sector in 1986

In 1986, provincial energy requirements decreased by an estimated four per cent. This was caused primarily by a mild winter and a forest industry labour dispute.

All sectors except transportation experienced a decline in energy requirements. Industrial sector requirements declined by five per cent, commercial by five per cent and residential by eight per cent. The decline in residential and commercial requirements reflects the sensitivity of their energy demand to changes in the weather. Transportation requirements increased marginally.

Provincial natural gas demand decreased by eleven per cent whereas exports to U.S. markets increased by eight per cent. Short term direct sales to U.S. markets were up by 83 per cent, more than offsetting a poor year of long term "system" gas sales.

Electricity requirements declined in both domestic and export markets. In the domestic market the decline was four per cent. However, exports to the Pacific Northwest plummeted from 10.7 billion kilowatt hours in 1985, to 2.1 billion kilowatt hours in 1986. Between April and July, there were no electricity exports.

The province's oil requirements increased marginally in 1986. Only 27 per cent of requirements were supplied from within the province; the deficit was made up through purchases of crude oil and refined products from Alberta.

**British Columbia End Use Consumption by
Energy Type and by Sector, 1985 and 1986 Petajoules (PJ)***

	Refined Petroleum Products				
	Motor Gasoline	LFO	Diesel	HFO	Aviation Fuel
	1985 (Actual)				
Road and Urban Transport	116	—	21	—	—
Marine	—	—	9	4	—
Airlines	—	—	—	—	17
Railways	—	—	11	—	—
Total Transportation	116	—	41	4	17
Industrial	—	2	28	19	—
Residential***	2	13	3	—	—
Commercial and Other Institutional	7	5	14	2	2
Total	125	20	86	25	19
	1986 (Estimate)				
Road and Urban Transport	116	—	19	—	—
Marine	—	—	9	5	—
Airlines	—	—	—	—	19
Railways	—	—	10	—	—
Total Transportation	116	—	38	5	19
Industrial	—	2	26	21	—
Residential***	2	11	3	—	—
Commercial and Other Institutional	7	4	13	2	2
Total	125	17	80	28	21

* A petajoule is a standard metric unit of energy equivalent to 25,426 cubic metres of oil, 27 million cubic metres of natural gas or 280 gigawatt hours of electricity.

** Less than 1 petajoule.

*** Includes apartments and agriculture.

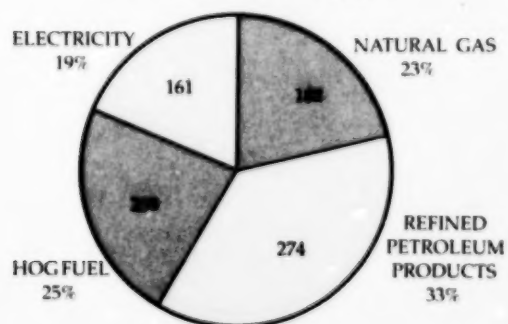
**** Rows or columns may not add to totals because of rounding.

Source: Ministry estimates and Quarterly Report on Energy Supply-Demand in Canada, Statistics Canada Cat. 57-003.

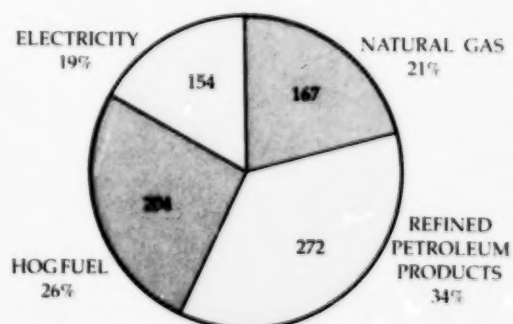
Natural Gas	Electricity	Propane	Hog Fuel and Pulping Liquor	Total
—**	—**	2	—	140
—	—	—	—	13
—	—	—	—	17
—	—	—	—	11
—**	—**	2	—	181
90	87	2	200	428
64	41	3	—	125
34	33	2	—	98
188	161	9	200	832 ****
—**	—**	3	—	139
—	—	—	—	14
—	—	—	—	19
—	—	—	—	10
—**	—**	3	—	182
80	82	3	194	408
57	39	3	—	115
30	33	2	—	93
167	154	10	194	797****

B.C. Energy Consumption

1985 (ACTUAL) 832 PETAJOULES



1986 (ESTIMATED) 797 PETAJOULES



* HOG FUEL INCLUDES PULPING LIQUOR AND PROPANE

Highlights

Energy policy initiatives in 1986 focussed on deregulation of natural gas markets and prices. In the electricity sector, studies were initiated on electricity deregulation.

The Agreement on Natural Gas Markets and Prices, signed by Canada and the gas-producing provinces in October 1985, provided for a 12-month transition period from government administered pricing to a market sensitive price regime in both the domestic and export natural gas markets.

Activities leading up to the target deregulation date of November 1, 1986, were designed to provide for both lower prices for consumers and improved market access for producers. The wholesale price of gas to the distribution utilities, which had

customarily been determined by Cabinet, was negotiated between the utilities and the supplier (the British Columbia Petroleum Corporation) with a significant drop in price level. Many large industrial gas consumers have negotiated supply contracts directly with producers and have made the necessary transportation arrangements with Westcoast Transmission and the distributors.

The price criteria for export gas have been modified and a review of provincial surplus determination procedures has begun in order to make them consistent with market pricing objectives.

Three new agreements were signed under the *Electricity Rate Discount Act* bringing the total to eleven. These

agreements enable industries to increase or maintain production that otherwise would not be profitable. The program has generated an additional \$33.5 million in revenue for B.C. Hydro and \$12.4 million for the province while creating an additional 560 jobs.

Since 1980, British Columbia has legislated responsibility and developed capability for managing energy resources, including the granting of certificates for the removal of energy resources from the province.

The province's procedures protect present and future domestic energy requirements and ensure that energy export prices are in the public interest.

In the fall of 1986, the National Energy Board held an Inquiry into the Regulation of Electricity Exports with an objective of reducing regulatory overlap. The Ministry made a submission to the Inquiry proposing that the National Energy Board accept the province's decisions with respect to surplus determination, pricing, licence term and other issues as sufficient evidence that the Board's requirements for energy export licences have been met.

In November, 1986, Cabinet established specific priorities for each Ministry for the coming year. In accordance with these instructions, the Energy Resources Division

began detailed studies on four projects:

1. Electricity exports to the United States;
2. Additional electrical generation capacity;
3. Electricity cost discounts in specific regions;
4. Energy to Vancouver Island for economic development.

These studies were continuing at year end.



MINERAL RESOURCES DIVISION

**THE MINERAL
RESOURCES DIVISION**
oversees the operation of
British Columbia's mining in-
dustry and facilitates the or-
derly development of min-
eral, coal and aggregate re-
sources in the province.

ASSISTANT
DEPUTY
MINISTER

**ENGINEERING
AND
INSPECTION
BRANCH**

Ensures worker and public safety, mine reclamation, and maximum economic extraction of mineral and coal resources based on sound engineering practices, using a network of district offices and specialists.

- * Geotechnical Section
- * Mechanical/Electrical Section
- * Reclamation Section
- * Mines Rescue and First Aid Section
- * Environmental Control Section
- * Mining and Petroleum Roads Section

**GEOLOGICAL
SURVEY BRANCH**
Carries out geological studies and provides the mineral industry with geological data.

- * Mineral Deposits and Regional Mapping Section
- * District Geology and Coal Resources Section
- * Resource Data and Analysis Section
- * Analytical Sciences Section

**MINERAL TITLES
BRANCH.**

Administers laws and regulations pertaining to the acquisition and maintenance of mineral tenures, using gold commissioners and sub-recorders in 24 mining divisions in the province.

**MINERAL POLICY
AND EVALUATION
BRANCH.**

Develops policy initiatives. Provides economic, financial and statistical analyses related to the mineral sector and maintains statistical data. Administers the Mine Development Review Process.

Value of Mineral Production 1982-86 (\$ million)

	1982	1983	1984	1985	1986*
Metals	1,057.5	1,106.0	1,036.9	1,006.8	1,131.4
Industrial Minerals	95.6	89.5	114.7	111.0	132.6
Structural Materials	164.2	208.4	200.1	232.8	234.6
Coal	566.9	555.8	1,007.5	1,028.3	1,000.2
TOTAL	1,884.2	1,959.7	2,359.2	2,378.9	2,498.8

*Estimate

The Mining Industry in 1986

World mineral markets produced a mixed showing during 1986, reinforcing an emerging pattern of structural change in the British Columbia mining industry. Some segments of the industry are facing difficult adjustments and limited growth prospects, while others are taking advantage of new opportunities in the precious metals field and expanding from new technologies for advanced materials.

The total value of minerals produced in British Columbia increased nominally over the previous year to \$2.5 billion. Production volumes of most minerals remained the same or increased slightly, an indication that the province's mineral producers are managing to hold onto their share of highly competitive markets.

Coal continued to be the province's most important mineral commodity, despite a slight reduction in both value and volume of production during 1986. British Columbia producers faced hard negotiating on their contracts with traditional Japanese buyers, resulting in further price and volume cutbacks. In view of the downturn in some overseas markets, the coal industry has been seeking to develop new domestic markets, both in the local cement and pulp industries and in eastern Canada. On Vancouver Island, the

Quinsam mine opened and began limited production of thermal coal for sale to local pulp mills. Generally, thermal coal markets have remained firm both at home and abroad, with coal maintaining its energy supply share in spite of falling world oil prices.

Further rationalization of the copper industry in British Columbia was seen in 1986. Increased productivity was the objective of several developments, such as the creation of Highland Valley Copper from Lornex and Cominco assets in the Highland Valley. Gibraltar Mines, located near Williams Lake, commenced construction of a 5 000 tonne/year heap-leaching plant at the mine, facilitated by a British Columbia Hydro electricity rate discount. The province's Commissioner of Critical Industries negotiated a package of initiatives which enabled the Similkameen mine near Princeton to remain in operation. As a result of these three developments, both the value and volume of copper produced in British Columbia increased slightly despite weak prices on over-supplied world markets.

1986 was the first full year of production from the Brenda copper-molybdenum mine, following its reopening in mid-1985 with the assistance of the Commissioner of Critical Industries. As a result, provincial molybdenum production rose

substantially. Also contributing to the increase was the reopening of the Endako primary molybdenum mine, aided by a British Columbia Hydro electricity rate discount.

Lead production in British Columbia dropped 12 per cent, largely due to reduced production from Cominco's Sullivan mine. In contrast, zinc production climbed nearly 30 per cent owing to Westmin's successful Buttle Lake expansion.

Although asbestos markets remained depressed, Cassiar Mining Corporation undertook detailed exploration and preliminary feasibility work on the McDame ore body, with the intention of replacing their present open pit operation with an underground mine.

The prime object of exploration and development interest in the province during 1986 was gold. With prices showing a strong upward trend, several properties showed promise as potential mines, primarily in the Toodoggone and the Stewart areas. Construction of the Blackdome mine near Clinton was completed and the mine commenced operations in May. The Nickel Plate mine near Hedley started construction in mid-1986. Several other precious metal projects are nearing production decisions.

Mineral Production of British Columbia, 1985 and 1986

	1985 Actual		1986 Estimate	
	QUANTITY	\$ VALUE	QUANTITY	\$ VALUE
METALS				
Copper kg	301 648 642	579 674 070	332 084 000	619 534 000
Gold g	6 768 676	94 497 832	8 732 000	154 903 000
Iron Concentrates t	87 571	3 819 609	64 000	3 442 000
Lead kg	116 811 328	42 337 760	103 204 000	36 885 000
Molybdenum kg	7 525 784	72 467 300	10 213 000	74 380 000
Silver g	348 445 259	93 015 692	405 272 000	99 717 000
Zinc kg	108 072 664	112 725 885	137 687 000	134 442 000
Others	—	8 226 370	—	8 120 000
Total Metals	—	1 006 764 517	—	1 131 423 000
INDUSTRIAL MINERALS				
Asbestos t	89 350	56 715 028	80 000	49 600 000
Sulphur t	500 979	42 907 957	497 000	73 876 000
Others	—	11 393 035	—	9 098 000
Total Industrial Minerals	—	111 016 020	—	132 574 000
STRUCTURAL MATERIALS				
Cement t	988 498	74 531 197	990 000	78 740 000
Sand and Gravel t	49 007 121	117 014 859	31 750 000	106 600 000
Others	—	41 278 736	—	49 271 000
Total Structural Materials	—	232 824 792	—	234 611 000
COAL t				
	22 552 599	1 028 317 201	2 378 922 530	1 000 178 000
TOTAL				
	—	2 359 187 279	21 518 000	2 498 786 000

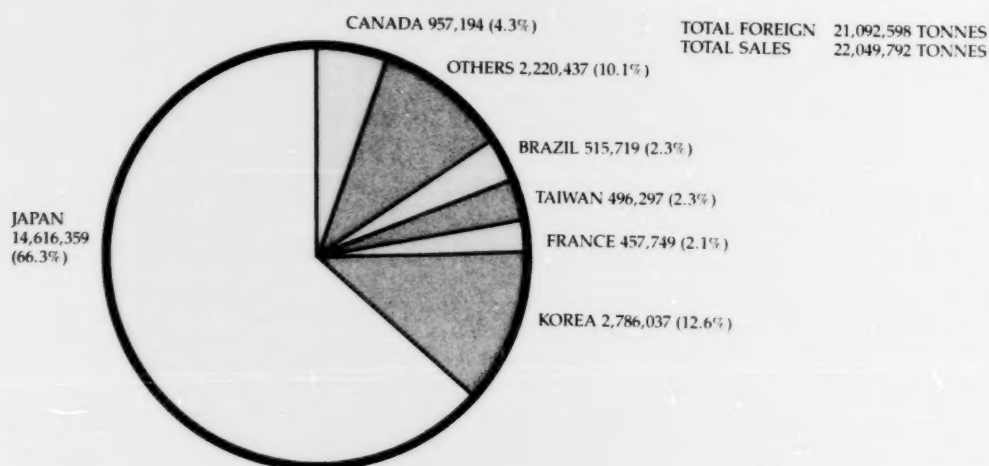
Provincial Revenue from the Mining Industry

	1982	1983	1984	1985 (Est.)	1986 (Est.)
Claims	3,541,482	4,202,796	4,125,943	3,984,549	3,744,961
Coal licences and rentals	2,954,387	2,704,183	2,816,777	2,630,730	2,390,979
Coal royalties	7,097,772	7,839,588	18,709,029	22,856,113	24,990,229
Mineral land taxes	13,989,511	14,570,271	16,817,588	19,088,336	14,279,477
Mineral resource taxes	1,136,895	(1,522,314)*	7,372,346	1,357,896	6,839,253
Mining taxes	6,378,279	910,831	2,297,638	3,742,405	515,624
TOTAL	35,098,371	28,705,355	52,139,321	53,660,028	52,760,523

NOTE: Excludes rentals and royalties on industrial minerals and structural materials.

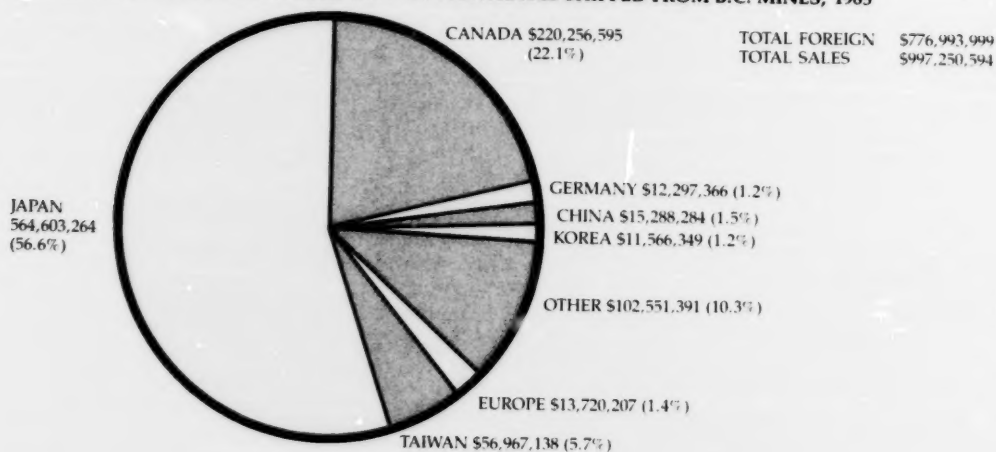
*Rebate for overpayment from previous year.

DESTINATION OF COAL SHIPPED FROM B.C., 1985 (TONNES)



Complete 1986 figures not available.

DESTINATION OF METALS IN ORES AND CONCENTRATES SHIPPED FROM B.C. MINES, 1985



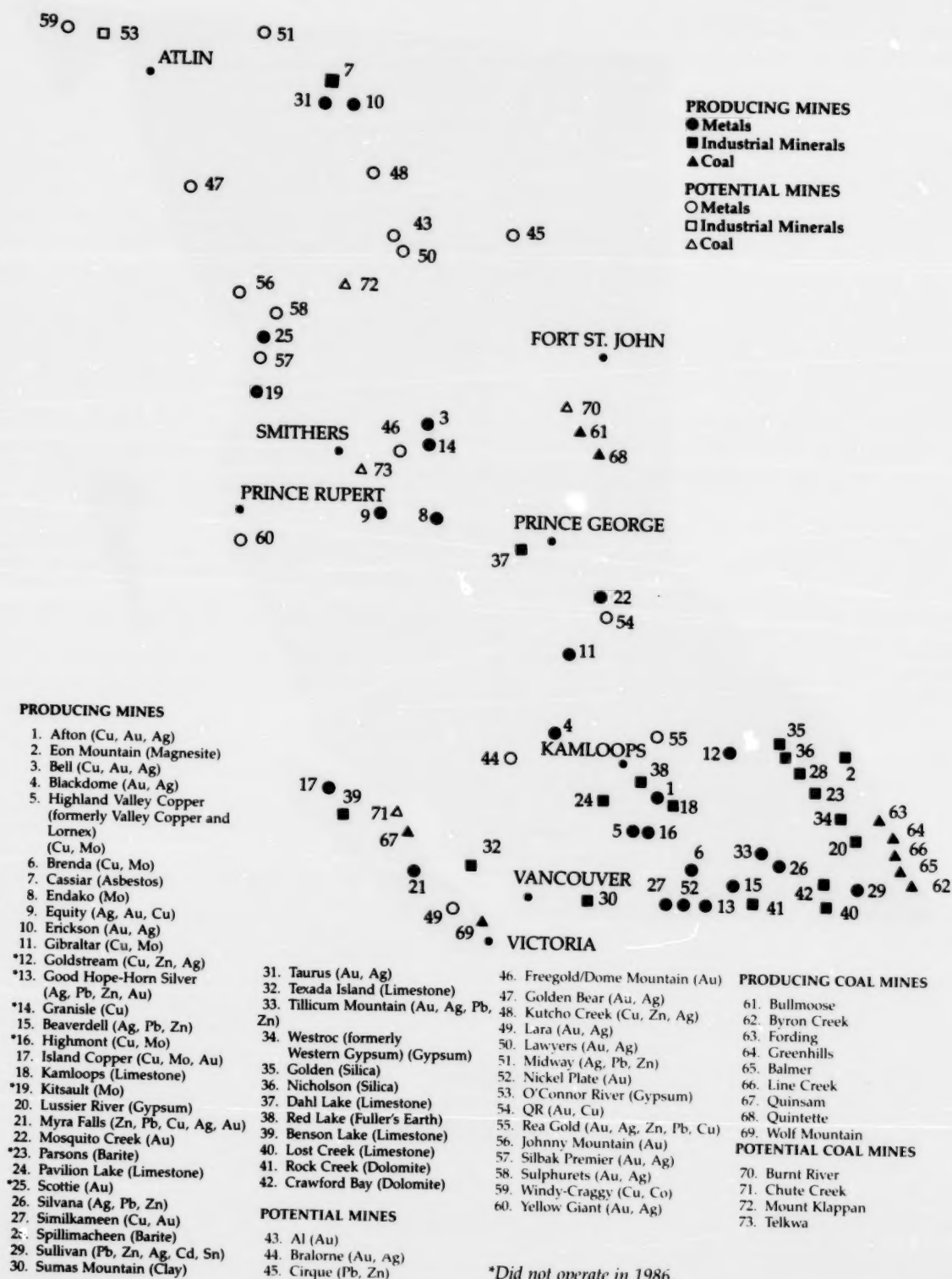
Complete 1986 figures not available.

EMPLOYMENT IN THE MINERAL INDUSTRY IN B.C. TO 1985

	Metals	Coal	Structural Materials	Industrial Minerals	Exploration & Development	Total
1982	12,583	4,652	573	554	6,651	25,013
1983	10,416	4,298	511	554	3,720	19,499
1984	9,208	5,781	492	437	4,789	20,707
1985	8,102	5,821	817	410	4,262	19,412

Complete 1986 figures not available.

Major Mines and Selected Potential Mines in British Columbia, 1986



Highlights

The highlight of 1986 was the introduction of the \$5 million Financial Assistance for Mineral Exploration (FAME) program. Designed to promote exploration activities, FAME provided funds for 155 exploration programs including grass-roots prospecting, properties with identified mineral potential, and exploration to extend reserve life at existing mines. Results indicate that this program will prove highly successful in helping discover and delineate new ore bodies, leading to either new mine developments or increased reserves at existing mines.

In the fall, Premier Vander Zalm and Mines Minister Davis requested that the mining industry establish a high-level task force to advise government on ways and means to revitalize the industry and stimulate its long term growth and development. The report is expected to help set the agenda for future mineral policy development in the province.

In December, following issuance of the report of the "Task Force on Expanded Use in Ontario of Low Sulphur Western Coal", the Division appointed a coal coordinator to promote increased British Columbia coal sales to Ontario by the 1990's. Also in December, the Minister announced that the seven year moratorium on uranium exploration and mining would be replaced by stringent new regulations when the moratorium lapses in early 1987.

1986 was the first full year of the five-year, \$10 million Mineral Development Agreement, a subsidiary agreement to the Canada-British Columbia Economic and Regional Development Agreement. The M.D.A., initiated in mid-1985, has had a significant impact on the province's mineral industry,

primarily in the upgrading of British Columbia's geological data base through regional mapping, geochemistry projects and metallogenic, coal and industrial mineral studies. The Mineral Opportunities Program of the M.D.A. provided funds for several market, technical and feasibility studies cost-shared with the private sector.

During the year a number of proposed projects moved closer to a production decision. Nine proposed coal and gold mine developments or expansions were approved for permitting through the Mine Development Review Process, designed to expedite the development of sound, publicly acceptable mine developments. Work continued on environmental and engineering road design studies for two major mine proposals, Gulf Canada Resources Ltd.'s Mt. Klappan Anthracite project and Cheni Gold Mines Inc.'s Lawyers project (jointly funded by the companies and the M.D.A.).

The Geological Survey Branch, with M.D.A. assistance, increased its program of geological and geochemical field surveys significantly over 1985 levels. Systematic geological mapping programs were initiated in areas of high metallic and industrial mineral potential and the scope of detailed mineral deposit studies was increased. Regional geochemical surveys and database development remained a high priority. A record number of Branch publications were released in 1986. These were well received by industry and continue to play an important role in stimulating mineral exploration activity by the private sector. Public access to databanks maintained by the Geological Survey Branch has been significantly enhanced by making them available on microcomputer diskettes.

The Engineering and Inspection Branch completed a restructuring of its operations in 1986 with organizational changes designed to provide for more efficient and consistent delivery of Branch programs. The major review of the *Mines Act* and its Regulations initiated in 1985 was continued during 1986. The Branch once again organized several mine rescue competitions at various locations throughout the province, as well as the National Mine Rescue competition in Nanaimo with competing teams representing five provinces and two territories. The Branch co-sponsored symposia on rock drains, reclamation, and industrial hygiene in addition to studies of very high waste dump stability and acid mine drainage.

The Mineral Titles Branch carried out extensive consultations with industry on amendments to the *Mineral and Mining (Placer) Acts*. Further progress toward more efficient record keeping was achieved with the aid of computers. This included issuance of 60 computerized claim maps of the most congested staking areas in the Victoria and Similkameen mining divisions.



PETROLEUM RESOURCES DIVISION

THE PETROLEUM RESOURCES DIVISION is responsible for the administration of Crown-owned petroleum and natural gas in British Columbia and for the regulation of drilling and production operations on land and in provincial offshore areas.

MEDIATION & ARBITRATION BOARD

Facilitates negotiations between petroleum operators and landowners for access to petroleum-bearing lands.

ASSISTANT DEPUTY MINISTER

OFFSHORE PETROLEUM COORDINATOR

Assists in preparation for west coast offshore exploration.

ENGINEERING AND OPERATIONS BRANCH

Regulates field operations to assure safety, protection of the environment and resource conservation. Provides resource analyses, oil and gas reserves data and statistical reports, and assessments of provincial policies and requirements.

- * Development Section
- * Reservoir Engineering Section
- * Field Operations — District Office, Charlie Lake, Fort St. John

PETROLEUM GEOLOGY BRANCH

Carries out geological studies and provides information to the petroleum industry.

- * Economic Geology Section
- * Geophysical Section
- * Reservoir Geology Section

PETROLEUM TITLES BRANCH

Administers title to Crown-owned subsurface oil and natural gas, and provides rights through a competitive bidding process. Approves geophysical operations and assures good practice.

- * Lease Administration Section
- * Revenue Section
- * Drafting Section

The Petroleum Industry in 1986

The petroleum industry in Western Canada felt the pronounced impact of the drop in world oil prices which affected all petroleum producing areas. In British Columbia, seismic exploration and exploration drilling reflected the restricted market outlook with a 40 per cent drop in activity.

A total of 161 wells were drilled in 1986, a decrease of 32 per cent from the previous year. There were 47 completed as oilwells, 35 for natural gas, and 24 at year end yet to be completed. Most of these were in the Fort St. John area and will be completed as oilwells.

Exploration for oil and gas in British Columbia continued into sedimentary basins outside of the Northeastern sector of the province, which has been the only petroleum producing area to date.

Two wells were drilled and abandoned on Vancouver Island. Additional drilling took place on Vancouver Island to evaluate the potential for extracting methane in commercial quantities from coal seams.

Three wells were also drilled in Southeastern British Columbia. At year end, one well was drilling south of Cranbrook in an area not previously tested for hydrocarbons, and a well authorization had been requested for a well near the town of Sparwood. The possibility of sour gas being found in these wells has brought to community attention the issues involved in sour gas exploration and development.

Value of Hydrocarbon Production (\$ millions) value to the producers at the wellhead

	1982	1983	1984	1985	1986
Crude oil	334	402	435	428	248
Field condensate	3	3	3	3	2
Natural gas	543	455	518	575	393
Gas plant liquids	33	39	42	44	18
Totals	913	899	998	1,050	661

Provincial Revenue from the Petroleum Industry (\$ millions)

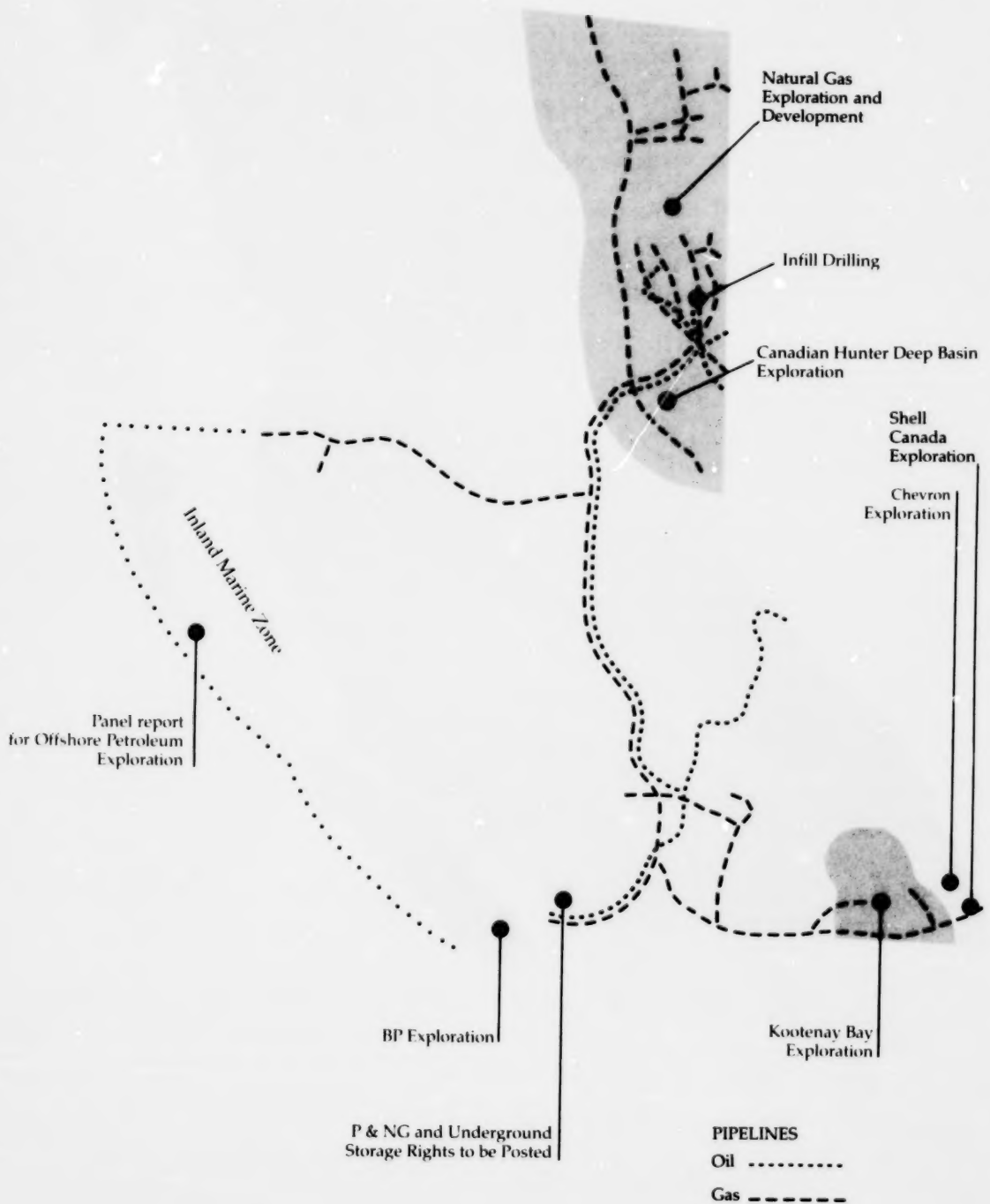
	1982	1983	1984	1985	1986
Rentals & fees	31	40	42	46	39
Crown reserve dispositions	17	26	62	88	29
Royalties (oil and products)	76	89	103	93	57
Natural gas royalties (or equivalent)	155	103	114	79	59
Totals	279	258	321	306	184

Production of oil and natural gas remained steady despite the drop in drilling operations. Oil production increased by three per cent while natural gas volumes delivered declined by nine per cent.

The petroleum industry remained at the forefront of resource sectors in its importance to the economy of British Columbia, although petroleum revenues were sharply down from the

previous year. Returns from the disposition of Crown rights were \$29 million, a 67 per cent drop. Fees and rentals on Crown rights declined 15 per cent, while royalties collected on oil and natural gas production declined 40 per cent and 27 per cent respectively.

Highlights of 1986 Petroleum Activities



Highlights

The activities of the Petroleum Resources Division reflected the requirements to support a maturing resource sector in British Columbia.

To improve service to petroleum companies and to bring increased efficiency to its own operations, the Division has had underway a phased program to computerize data handling. In 1986 emphasis was placed on developing a new system for handling production records and for reserves reporting. Data tapes are available to petroleum operators.

The natural gas marketing system, which provides an explicit royalty for natural gas, came into effect in 1985. This set the stage for an on-going effort to assist deregulation and provide greater flexibility in natural gas marketing. Reviews of well and field economics, the impact of adjustments to the established royalty system, and an analysis of producer cost of service allocations were typical projects to support the intent of the provincial government to create a favourable climate for investment in natural gas development. A review of reserves and natural gas productivity and an outlook on gas yet to be discovered show favourable prospects for exploration in British Columbia, and a clear need for active drilling to prove up new reserves to meet markets as they develop.

The extent of the occurrence of sour gas in British Columbia, two-thirds of existing wells having significant hydrogen sulphide, and the potential for hazardous situations in sour gas operations led to a review of "special well" requirements for operations in areas of risk. Emergency response plan guidelines and internal procedures were under review for wells and associated facilities.

Views were solicited from the petroleum industry on terms to be applied to the disposition of exploration rights, including rights to underground storage of natural gas in the Fraser Valley. A number of companies stated their interest, and will be consulted further before rights are posted for sale.

The environmental review for West Coast offshore exploration was completed early in 1986.

Recommendations from the Offshore Exploration Environmental Assessment Panel were submitted jointly to the federal and provincial governments for a review on how they could best be implemented. A geological assessment by Division staff shows encouraging prospects for finding oil and natural gas in West Coast offshore basins.

The disposition of Crown petroleum and natural gas rights was assisted by increasing the number of sale dates from five in previous years to eight in 1986. Average prices paid to acquire acreage declined, but British Columbia maintained sales at a favourable level when compared to other producing provinces.

The Mediation and Arbitration Board carried out its usual duties, primarily in the northeastern sector of the province, including wellsite inspections, issuing Right-of-Entries for new well locations, mediating hearings and settling cases by arbitration. The Board also opened a suboffice in Nanaimo during the latter half of the year to deal with enquiries from Vancouver Island landowners who felt they might be entitled to mineral rights underlying land in an area where BP Resources drilled two exploratory wells.



FINANCE AND ADMINISTRATION DIVISION

THE FINANCE AND ADMINISTRATION DIVISION provides support for the Ministry's operations and programs, and manages the assessment and collection of taxes and royalties from the mineral and petroleum industries.

EXECUTIVE DIRECTOR

FINANCE AND RESOURCE REVENUE BRANCH

Provides financial administration for all sections of the Ministry. Administers taxes and royalties assessed under the Mineral Resources Tax Act, Mineral Land Tax Act, Coal Royalty Regulations and Petroleum and Natural Gas Royalty Regulations.

ADMINISTRATION BRANCH.

Manages office space, field equipment, vehicles, telecommunications, assets, purchasing, mail and courier services for the Ministry. The Branch also distributes Ministry maps and publications.

DATA SERVICES BRANCH.

Plans and manages data processing operations, including automation of Mineral Titles and Petroleum Titles systems.

PERSONNEL SERVICES BRANCH.

Provides services for staff recruitment and selection, employee relations, job classifications, staff training and development and safety programs.

Highlights

Revenue collections by the Ministry in 1986/87 are estimated to have declined by 32 per cent to \$224.6 million from \$331.0 million collected in 1985/86. The principal reason for this decline was the continued low world oil price which caused a fall in the export price of natural gas reflected in substantially lower petroleum and natural gas royalties. Drilling rights and bonus bid revenues also fell — from \$88 million to \$61 million — as industry cut back exploration programs in response to severely reduced cash flows.

In 1986, the Division completed a strategic plan for the Ministry's information systems including selecting the Digital Equipment Corporation line of VAX computers for all database, CAD/CAM and scientific computing, and confirming the use of AES Data Ltd. wordprocessors in the Ministry's office automation program.

Several new information systems were completed during the year, and \$400,000 worth of new equipment was installed in Victoria and the District Offices.

During the year, plans for the expansion of the drilling core storage facility at Charlie Lake were completed. This project will add ten years of storage capacity for petroleum core samples and double the area available to industry for examination of drill cores. Plans for the consolidation of Ministry headquarters offices at 617 Government Street were also continued. The Division also introduced a new Asset Control Procedures Manual and further enhanced the Ministry's radio-telecommunications equipment.

Staff training programs continued to focus on key Ministry needs, such as computer and financial training and professional development, while the

Women's Program continued to provide a focal point for intra-Ministry discussion of women's issues as they arose. A series of lunch hour programs featuring guest speakers, films, etc., gave women in the Ministry an increased awareness of issues affecting women at work and the resources available for solving specific problems. In conjunction with other resource ministries, a Career Information Day was held.

Ministry of Energy, Mines and Petroleum Resources
Details of Expenditures by Appropriations and Activities, and
by Standard Expenditure Classification

For the Fiscal Years 1985/86 and 1986/87

(These two fiscal years bracket the 1986 calendar year.)

Summary of Expenditures	FISCAL YEAR 1985/86	FISCAL YEAR 1986/87 (Est.)
Minister's Office	182,186	197,000
Resource Management Program (net of recoveries)		
Executive Management	736,539	770,000
Finance and Administration Division	2,581,606	3,050,000
Energy Resources Division	2,924,901	5,600,000
Mineral Resources Division	8,892,943	10,000,000
Petroleum Resources Division (Note 1)	4,918,693	4,000,000
Fort Nelson Indian Band Revenue Sharing Agreement Statutory	743,627	650,000
Financial Administration Act Sec. 24 (c) — Interest on Revenue Refunds	26,250	0
Financial Administration Act Sec. 14 — Write offs (Note 2)	52,500	390,000
Financial Administration Act Sec. 22 — Mount Klappan Planning Studies (note 3)	0	0
Mines Act Sec. 15 (2) — Mine Improvement	16,704	25,000
Mineral Development Agreement (Net of Recoveries)	823,219	1,253,000
Mineral Exploration Incentives Program	0	5,000,000
Financing Transaction — NORP Program (Net of Recoveries) (Note 4)	0	0
TOTAL	21,899,168	30,935,000

Standard Expenditure Classification	FISCAL YEAR 1985/86	FISCAL YEAR 1986/87 (Est.)
Salaries	11,455,019	11,550,000
Supplies and Services	6,038,719	7,825,000
Capital (Note 1)	2,458,661	1,990,000
Other Expenditure (NORP Program, Write Offs and Mount Klappan Project)	9,248,825	1,487,000
Grants (Includes Fort Nelson Revenue Sharing Agreement)	1,894,268	9,180,000
Recoveries (NORP Program, Mineral Development Agreement and Mount Klappan Project)	(9,196,324)	(1,097,000)
Total	21,899,168	30,935,000

Notes

1. Amount includes \$1,500,000 in Fiscal 1985/86 for capital construction of a petroleum resource road to Desan Lake.
2. Uncollectable accounts receivable.
3. Mount Klappan Planning Studies costing \$82,625 in Fiscal 1985/86 were fully recovered from the study participants.
4. Payments to producers under the Federal government's New Oil Reference Price (NORP) program totalling \$9,072,248 were fully recovered. This program was discontinued on July 1, 1985, by the Western Accord.

MINISTRY TELEPHONE DIRECTORY

DEPUTY MINISTER'S OFFICE

.....	387-5137
Executive Coordinator	387-5137
Communications Branch	
<i>General Inquiries</i>	387-5178
Library	387-6407
Publications Production	387-5631



ENERGY RESOURCES DIVISION

Assistant Deputy Minister	387-1916
Policy Development Branch	387-5231
Project Analysis Branch	387-5231
Forecasts and Special Projects Branch	387-5231



MINERAL RESOURCES DIVISION

Assistant Deputy Minister	387-6242
Mineral Titles Branch	387-4417
Engineering & Inspection Branch ...	387-3781
Geological Survey Branch	356-2818
Chief Geologist	387-0688
Resource Data and Analysis	356-2818
Mineral Deposits and	
Regional Mapping	356-2818
Drafting	387-5975
District Geology and	
Coal Resources	356-2834
Lapidary	387-6758
Analytical Sciences	387-6249

Nanaimo 755-2486



PETROLEUM RESOURCES DIVISION

Assistant Deputy Minister	387-3485
Engineering & Operations Branch ...	387-5993
Reservoir Engineering	387-5993
Development Engineering	387-5993
File Room	387-5993
Petroleum Geology Branch	387-5993
Drafting	387-1908
Petroleum Titles Branch	387-1908
Drafting	387-1908
Offshore Coordinator	387-1908



FINANCE & ADMINISTRATION DIVISION

Assistant Deputy Minister	387-5135
Finance & Resource Revenue Branch	
Resource Revenue	387-6991
Financial Services	387-5185
Administration Branch	387-1368
Publications Distribution	387-3188
Mail/Supply Room	387-6248
Data Services Branch	387-1267
Personnel Branch	387-3775

DISTRICT OFFICES

Fernie	423-6884
Fort St. John (Charlie Lake)	787-3450
Mediation & Arbitration Board	787-3403
Kamloops	828-4566
Nanaimo	758-8971
Nelson	354-6125
Prince George	565-6125
Quesnel	992-4222
Smithers	847-7383
Vancouver	
Mineral Titles	660-2672
Inspection & Engineering	660-9363
Geological Survey Branch	660-2812